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10/552,989	02/05/2007	Kohei Nagayama	00684.109158.	2484

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EXAMINER	
BRAY, STEPHEN A	
ART UNIT	PAPER NUMBER
2629	
MAIL DATE	DELIVERY MODE
12/27/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,989	NAGAYAMA, KOHEI	
	Examiner	Art Unit	
	STEPHEN A. BRAY	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 3-7, 15-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-7,15 and 17-19* is/are rejected.

7)☒ Claim(s) *16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/25/2010 has been entered.

Response to Arguments

2. Applicant's arguments filed have been fully considered but they are not persuasive. Regarding the Applicants arguments on Pages 4-5 that Ikeda et al (US 6,741,385) fails to teach the limitation "...*a resistance layer...continuously arranged between a surface of a liquid layer side of the first electrode and a surface of a liquid layer side of the second electrode*.". Column 6, lines 34-47 *Ikeda et al* discloses having an insulating layer formed which covers electrodes 5a and 5b, where electrode 5a corresponds to the first electrode and electrode 5b corresponds to the second electrode. It is well known in the art that electrically insulating materials are highly resistive. Therefore the surface insulating layer can be considered to be a resistance layer which has a high resistance value. Figure 4 of *Ikeda et al* discloses having an acrylic resin layer 11 which covers the first electrode 5a and the second electrode 5b, where acrylic resin is disclosed in Column 6, lines 38-42 of *Ikeda et al* to be an acceptable material for forming an insulating layer. Therefore *Ikeda et al* does teach

forming a resistance layer that is continuously arranged between a surface of a liquid layer side of the first electrode and a surface of a liquid layer side of the second electrode.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 5, 7, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (WO 2004/044647) in view of Ikeda et al (US 6,741,385).

Regarding claim 1, *Endo* discloses an electrophoretic display device (Figure 1 of *Endo* discloses an electrophoretic display.), comprising:

a substrate (Figure 1 and Page 10, lines 6-18 of *Endo* disclose having a first substrate 1.),

a light-transmissive sealing plate (Figure 1 and Page 19, lines 6-14 of *Endo* disclose the second substrate 2 is made of a transparent material and thus acts as a light-transmissive plate.);

a partition wall disposed between a surface of the substrate and the sealing plate (Figure 1 and Page 9, line 24 through Page 10, line 14 of *Endo* discloses having a partition wall 7 disposed between the first substrate 1 and the sealing plate 2.),

a liquid layer, disposed in a container including the substrate and the partition wall, comprising electrophoretic particles and a dispersion medium (Figure 1 and Page 9, line 10 through Page 10, line 18 of *Endo* discloses having electrophoretic particles 6 disposed in an insulating liquid 5 located within a container formed by the substrate 1, the sealing plate 2, and the partition walls 7.),

a first electrode formed at a position apart from the partition wall on the substrate (Figure 1 of *Endo* discloses having a first electrode 3 disposed in the center of the display cell.),

a second electrode formed along the partition wall (Page 10, lines 7-10 of *Endo* discloses that the second electrode 4 can be formed on the surface of partition wall 7.), and

means for applying a voltage between the first electrode and the second electrode (Page 15, lines 7-15 of *Endo* discloses applying a voltage between the first and second electrodes. Therefore it is inherent that there is a means for applying a voltage connected to the first and second electrodes.),

Endo fails to teach wherein a resistance layer electrically connecting the first electrode and the second electrode and continuously arranged between a surface of a liquid layer side of the first electrode and a surface of a liquid layer side of the second electrode.

Ikeda et al discloses wherein at the surface of the substrate defining part of the container, a resistance layer electrically connecting the first electrode and the second

electrode is formed (Column 6, lines 34-47 *Ikeda et al* discloses having an insulating layer formed which covers electrodes 5a and 5b, where electrode 5a corresponds to the first electrode and electrode 5b corresponds to the second electrode. It is well known in the art that electrically insulating materials are highly resistive. Therefore the surface insulating layer can be considered to be a resistance layer which has a high resistance value. Figure 4 of *Ikeda et al* discloses having an acrylic resin layer 11 which covers the first electrode 5a and the second electrode 5b, where acrylic resin is disclosed in Column 6, lines 38-42 of *Ikeda et al* to be an acceptable material for forming an insulating layer.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the electrophoretic device taught by *Endo* with the teachings of *Ikeda et al* in order to form a display device with higher display contrast.

Regarding claim 3, *Endo* as modified above discloses a device according to claim 1 or 2, wherein the resistance layer is formed to cover the partition wall (Page 10, lines 7-10 and Page 13, lines 23-27 of *Endo* discloses forming a surface insulating layer over the second electrode 4 formed on the partition wall 7.).

Regarding claim 5, *Endo* as modified above discloses a device according to claim 1, wherein the resistance layer is formed of a transparent material, and a light reflection layer is disposed opposite to the liquid layer through the resistance layer

(Column 6, lines 6-47 and Column 7, lines 26-37 of *Ikeda et al* discloses forming the insulating layer out of a high-transparent polymide material and having the electrode upon which the insulating layer is formed act as a light reflection layer.).

Regarding claim 7, *Endo* as modified above discloses a device according to claim 1, wherein the first electrode is extendedly formed opposite to the liquid layer through the resistance layer and an insulating layer (Figure 3 of *Ikeda et al* discloses electrodes 5a and 5c which are formed through insulating layers 4 and 9, of which layer 9 could be called a resistive layer with very high resistance.).

Regarding claim 18, *Endo* as modified above discloses a device according to claim 1,wherein the resistance layer comprises electroconductive resin film including metal powder in epoxy resin, carbon particles in epoxy resin, metal powder in polypropylene, carbon particles in polypropylene (Column 8, line 59 through Column 9, line 3 of *Ikeda et al* discloses that the acrylic resin layer 11 which acts as an insulating film can also contain titanium oxide (metal) particles.).

Regarding claim 19, *Endo* as modified above discloses a device according to claim 1, wherein the first electrode is formed of a metal film (Page 24, lines 19-26 of *Endo* discloses that the first electrode 3 can be formed of an aluminum film.).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (WO 2004/044647) and Ikeda et al (US 6,741,385) as applied to claim 1 above, and further in view of Lindsay et al (US 6,861,497) and Swidler (US 5,411,833).

Regarding claim 4, *Endo* as modified above discloses a device according to claim 1 (Column 6, lines and Column 7, lines 38-40 of *Ikeda et al* disclose that the insulating layer can be formed out of amorphous fluororesin, high-transparent polyimide, acrylic resin while the insulating liquid 2 can be made of isoparaffin, silicone oil, xylene, or toluene.).

Lindsay et al discloses the resistance value of the resistance layer (Column 2, lines 43-54 and the abstract of *Lindsay et al* disclose having a transparent polyimide material which has an electrical resistivity which ranges from 10^6 to 10^{16} Ohm-centimeters in value.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the electrophoretic device taught by *Endo* with the teachings of *Lindsay et al* in order to form a display device in which the insulating layer has a high resistance to solvents and is easily processed into thin films.

Swidler discloses the resistance value of the liquid layer (Column 11, lines 44-68 of *Swidler* discloses having a silicon oil carrier liquid which has a volume resistivity of 10^9 to 10^{10} Ohm-centimeters in value.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the electrophoretic device taught by *Endo* with the teachings of *Swidler* in order to form a display device in which the liquid layer with not interfere with the electric field generated by the electrodes.

Therefore *Endo* in view of *Ikeda et al* and *Lindsay et al* and *Swidler* discloses the resistance layer has a resistance value smaller than a resistance value of the liquid layer ((Column 6, lines and Column 7, lines 38-40 of *Ikeda et al* disclose that the insulating layer can be formed out of a high-transparent polyimide material and the insulating liquid 2 can be made of silicone oil. Column 2, lines 43-54 and the abstract of *Lindsay et al* discloses a transparent polyimide material having an electrical resistivity which ranges from 10^6 to 10^{16} Ohm-centimeters. Column 11, lines 44-68 of *Swidler* discloses having a silicon oil carrier liquid which has a volume resistivity of 10^9 to 10^{10} Ohm-centimeters. Therefore the resistance value of the resistance layer is smaller than the resistance value of the liquid layer.).

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (WO 2004/044647) and Ikeda et al (US 6,741,385) as applied to claim 1 above, and further in view of Uno et al (US 6,727,883).

Regarding claim 6, *Endo* as modified above discloses a device according to claim 5.

Endo as modified above fails to teach wherein between the resistance layer and the light reflection layer, a coloring layer formed of an insulating material is disposed.

Uno et al discloses wherein between the resistance layer and the light reflection layer, a coloring layer formed of an insulating material is disposed (Figure 1 and Column 12, lines 35-47 disclose that colored layers 8a and 8b are formed between insulating layer 9 and first substrate 1a.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the electrophoretic device taught by *Endo* with the teachings of *Uno et al* in order to form a display device in which colored images can be created without requiring the electrophoretic particles to be colored.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (WO 2004/044647) and Ikeda et al (US 6,741,385) as applied to claim 1 above, and further in view of Hayase et al (US 5,962,581).

Regarding claim 15, *Endo* as modified above discloses a device according to claim 1.

Endo as modified above fails to teach wherein the resistance layer comprises an organic compound film of polysilane, polysiloxane, polyacetylene, composites thereof, or copolymers thereof.

Hayase et al discloses wherein the resistance layer comprises an organic compound film of polysilane, polysiloxane, polyacetylene, composites thereof, or copolymers thereof (Column 2, line 66 through Column 3, line 15 of *Hayase et al*

discloses that it is known in the art to form an insulating film out of polysilane. It is well known in the art that electrically insulating materials are highly resistive. Therefore the surface insulating layer can be considered to be a resistance layer which has a high resistance value.).

Therefore the polysilane insulating film as taught by *Hayase et al* could have been substituted for the insulating layer as taught by *Ikeda et al* and the results would have been predictable and resulted in an insulating layer in which the injection of an electric charge into the charged electrophoretic particles from the first electrode and the second electrode can be prevented. Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art at the time the invention was made.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (WO 2004/044647) and Ikeda et al (US 6,741,385) as applied to claim 1 above, and further in view of Yamada et al (US 2004/0058079).

Regarding claim 17, *Endo* as modified above discloses a device according to claim 1.

Endo as modified above fails to teach wherein the resistance layer comprises semiconductor film.

Yamada et al discloses wherein the resistance layer comprises semiconductor film (Paragraph [0002] of Yamada et al discloses that it is known in the art to form an insulating layer out of a semiconductor film. It is well known in the art that electrically

insulating materials are highly resistive. Therefore the surface insulating layer can be considered to be a resistance layer which has a high resistance value.).

Therefore the semiconductor insulating film as taught by *Yamada et al* could have been substituted for the insulating layer as taught by *Ikeda et al* and the results would have been predictable and resulted in an insulating layer in which the injection of an electric charge into the charged electrophoretic particles from the first electrode and the second electrode can be prevented. Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art at the time the invention was made.

Allowable Subject Matter

9. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: The Examiner was unable to find a prior art reference which taught that an insulating layer was formed out of an indium-tin-oxide film. The Examiner was also unable to find a prior art reference in which a first electrode and a second electrode were connected together via an indium-tin-oxide film, where the indium-tin-oxide film is continuously arranged between a surface of a liquid layer side containing electrophoretic particles of the first electrode and a surface of a liquid layer side containing electrophoretic particles of the second electrode.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN A. BRAY whose telephone number is (571)270-7124. The examiner can normally be reached on Monday - Friday, 9:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AMR AWAD can be reached on (571)272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN A BRAY/
Examiner, Art Unit 2629

/Amr Awad/
Supervisory Patent Examiner, Art Unit 2629
18 December 2010